Dresden University of Technology

Faculty of Physics

DRESDNER PROMOTIONSPREIS PHYSIK 2025

Program:

- Opening: Dean of the Faculty of Physics, Prof. Dr. Gesche Pospiech
- Laudations: Chair of the Prize Committee, Prof. Dr. Roland Ketzmerick
- Laureate Lectures: Dr. Nilotpal Chakraborty and Dr. Maximilian Obst
- Reception with drinks and small snacks (Recknagel-Bau, wing C, foyer of C213)

Time and Place: Tuesday, December 2, 2025, **2:50 pm** – hybrid event
The colloquium will be held in REC/C213.
Online participation possible:
Zoom-Meeting: Meeting-ID: 631 3817 8900 / passcode: PC-WiSe25
https://tu-dresden.zoom-x.de/j/63138178900?pwd=TlmGawPz1dtDA6VzO2N1XdqqI7bE6b.1

Lectures:

Dr. Nilotpal Chakraborty: Magnon transport - A new window into topological quantum matter

I shall present a back-and-forth between theory and experiment on a novel magnon scattering setup in graphene quantum Hall heterojunctions, with the promise of developing a mesoscopic real-space probe for topology in quantum matter, especially quantum Hall insulators. The setup will be that of magnons scattering off a quantum Hall skyrmion crystal - a Wigner crystal of topological spin textures. First, I'll discuss theory related to magnon emission and detection in such scattering setups and the magnon-skyrmion crystal interaction. Then, I'll present experimental signatures which unveil the topological properties of such a crystal through non-equilibrium magnon-induced collective dynamics.

Dr. Maximilian Obst: Tailoring Phonon Polaritons in 2D van der Waal Materials

Tailoring the propagation of light at the nanometer-length scale is a major goal in nano-optics. Phonon polaritons - quasi-particles formed by light interacting with optical phonons - propagating in thin layers of van-der-Waals materials are key to solve this challenge, as they intrinsically offer high light confinement, low losses, and directional energy transport. Furthermore, they allow profound tuning of their properties, e.g. via changing the substrate or stacking multiple layers under defined twist angles. The work presented here focuses on the means of tailoring phonon polaritons at THz frequencies, an underexplored wavelength regime featuring the optical phonons of many materials.

WILHELM UND ELSE HERAEUS-STIFTUNG

Mitglied von:
DRESDEN concept
Exzellenz aus Wissenschaft und Kultur